Handling/Storage of Chemicals
ACTIVITY HAZARDS ANALYSIS
Hydrologic Engineering Branch

ACTIVITY: Handling/Storage of Chemicals
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PRINCIPAL STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
Mercury	1. Death or bodily injury. 2. Environmental contamination.	1. Follow regulations for clean-up procedures (acids, chemicals, mercury) 2. See attached SOP 1-4 for proper disposal, ventilation, spill and cleanup. 3. Yearly medical exams (includes blood draw/ urinalysis for mercury detection) 4. Water Control office and truck need mercury spill clean-up kits. 5. Clean mercury vacuums as soon as possible after use. 6. Water Control office will have an approved, clearly marked container for temporary storage of mercury contaminated items. These will be properly disposed of in a timely manner. 7. Contaminated mercury metal will be properly recycled. 8. Mercury metal will be stored only in approved containers. 9. Mercury metal will be stored in locked, clearly labeled containers when stored in Water Control trucks.
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
1. Mercury vacuum 2. Protective clothing (as required)	Inspect mercury vacuum for proper operation.	1. Mercury vacuum operation. 2. Hazardous waste manifest training. 3. OHSA 40 hour health and safety training.

SOP #1 - WORKING WITH METALIC MERCURY

1. Prohibit eating, drinking, smoking and the storage of food, drinks, and smoking materials where mercury is stored or used.

2. Avoid skin contact. Use rubber (Nitrile) or polyethylene gloves when handling mercury, but avoid using disposable gloves, which can tear and allow mercury to lodge under the fingernails.

3. Wash hands and face after handling mercury and before lunch, breaks, or leaving work.

4. Anyone handling or potentially handling mercury must be trained in the use of the mercury vacuum.

5. Mercury spill-control kits are needed in places where more than 1 cm3 of mercury is stored.

6. Assure that areas where mercury is used have adequate ventilation or vapor containment systems.

7. Avoid working with mercury on surfaces with cracks, crevices and hard to reach spaces. Also avoid porous surfaces (carpet, wood). Concrete floors sealed with epoxy or another surface that also has few crevices are preferred.

8. Whenever possible, place equipment containing mercury in a catch basin. The catch basin needs to be made of smooth impervious materials (plastic or smooth finish paint), must be large enough to contain the greatest amount of mercury that could spill, have sufficient dimensions to catch mercury droplets escaping from any plausible direction and must have lips (steep lips will be more effective than gentle rises in trapping spilled mercury).

9. Protect large or complex systems with mercury by placing catch pans under each major component.

10. Avoid storing or handling mercury near sinks. Spilled mercury could run into the sink, lodge in the trap, ruin the pipe by amalgamating with and weakening the metal.

11. Felt mats or horsehair mats can be put on seamless plastic sheets laid in catch pans to catch the droplets from mercury spills. The droplets can then be collected by simply wrapping up the plastic with the mat still inside and disposing of it as mercury waste.

SOP #2 – MERCURY SPILLS

1. Immediately determine vapor hazard

   < 0.025 mg/m^3

   0.025 mg/m^3 $\leq$ FF/APR/HgCart $\leq$ 1.25 mg/m^3

   1.25 mg/m^3 Supplied Air Respirator/SCBA

2. For spill incidents with vapors < 0.025 mg/m^3 strongly suggest impervious coveralls (saranex/polycoated tyvek) to eliminate potential contamination of personal clothing.

3. For vapors $\geq$ 0.025 mg/m^3 PPE must include:

   i. Saranex or Polycoated Tyvek (vapor barrier)
   ii. Inner gloves (latex etc.) / outer Nitrile gloves & tear/puncture resistant for glass breaks
   iii. Impermeable outer booties for decon/cross contamination
   iv. Hg cartridges must be from a sealed container

4. Minimize potential to spread/track with available sorbents/tools (sponges, vacuum, spill kit powders)

5. Assess need for further clean-up by visual inspection, Jerome survey.

6. Use caution with the use of wet methods since larger waste disposal issues may result.

SOP #3 – MATERIALS OF TRADE INVENTORY

This vehicle is operated in compliance with 49 CFR 173.6 “Material of Trade Exceptions”

Vehicle ID#_____

Compressed Gases	*container count*	*weight*	*RQ*	*total wt.*
Flammable	_____	_____	____	_____
Nonflammable	_____	_____	____	_____
Oxidizer	_____	_____	____	_____
Flammable Liquids				
_____	_____	_____	____	_____
_____	_____	_____	____	_____
_____	_____	_____	____	_____
_____	_____	_____	____	_____
_____	_____	_____	____	_____
Corrosive Liquids				
_____	_____	_____	____	_____
_____	_____	_____	____	_____
_____	_____	_____	____	_____
_____	_____	_____	____	_____
_____	_____	_____	____	_____

The following individuals have received a 4 hour function specific training course on 9/23/1999 in compliance with 49 CFR 173.6

_____ _____ _____

_____ _____ _____

SOP #4 – MERCURY WASTE HANDLING

1. Handle all mercury spill residue, debris and contaminated clothing as a hazardous material in accordance with SOP #1.

2. Containerize spill residues and clothing in appropriate container and mark **Mercury Spill Residue** for transport back to the boatyard under MOT exceptions.

The following logic applies. DOT defines Hazardous Waste as materials subject to manifesting under 40 CFR 262. Conditionally exempt small quantity generators are exempt from manifesting provisions. Therefore mercury spill residues do not meet the DOT definition of a hazardous waste, and can be covered by the MOT exceptions. Transporting mercury spill residues back to the boatyard is a reasonable Material of Trade activity for the water quality section under their day to day activities.

3. Disposal of mercury spill residues needs to be coordinated with CENWO-OP (Willcuts) and CENWO-HX-T (Bave). Existing DRMO contract capabilities or alternative resources can be used for disposal.

General Hg Disposal Issues (Non CESQG)

4. Used mercury is a Listed Hazardous Waste (U151), if disposed.

5. Used mercury (spent) from manometers or spills is a characteristic waste (D009, TCLP 0.02 mg/l).

6. Land disposal restrictions for Non-wastewaters based on subcategory of $\geq$ 260 mg/kg and < 260 mg/kg. High subcategories require RMERC (retort). Low subcategories must be treated to 0.025 mg/l TCLP.

7. Since the boatyard and Water quality sections are conditionally exempt small quantity generators, special provisions apply. Coordinate with CENWO-OP and CENWO-HX-T prior to waste classification and disposal.